

REMARKS

Reconsideration of this application in view of the above amendments and the remarks below is respectfully requested. Claims 1, 6, 11-13, 20, 25, 30-33, 43-46, and 56-58 are amended. No claims are cancelled or added. Hence, Claims 1-6, 11-13, 20-25, 30-38, 43-51, and 56-58 are pending in the application.

I. CLAIM OBJECTIONS

Claims 1-6, 11-13, 20-25, 30-38, 43-51, and 56-58 are objected to because of informalities. The claims have been amended to address this issue. Removal of the objection is respectfully requested.

II. REJECTIONS NOT BASED ON PRIOR ART

Claims 1-6, 11-13, 20-25, 30-38, 43-51, and 56-58 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Reconsideration and removal of the rejection are respectfully requested because these claims, as amended, comply with the written requirement.

III. ISSUES RELATED TO ALLEGED PRIOR ART

A. ISSUES RELATED TO 35 U.S.C. 103(a) – *SOUMIYA, FODER, AND BESHAI*

Claims 1, 12, 20, 31, 33, 44, 46 and 57 are rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Soumiya, US005583857A (hereinafter "*Soumiya*") in view of Fodor, US006788646B1 (hereinafter "*Fodor*"), and in further view of Beshai (IEEE journal, hereinafter "*Beshai*"). The rejection each of the claims is respectfully traversed.

"All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). When evaluating claims for obviousness under 35 U.S.C. 103, all the limitations of the claims must be considered and given weight, including limitations which do not

find support in the specification as originally filed (i.e., new matter). *Ex parte Grasselli*, 231 USPQ 393 (Bd. App. 1983) *aff'd mem.* 738 F.2d 453 (Fed. Cir. 1984).

Independent Claim 1

Claim 1 recites:

receiving a grade of service (GoS) factor and a quality of service (QoS) factor, wherein the GoS factor specifies a maximum call blocking probability for a link and the QoS factor specifies a maximum packet loss probability for said link;
determining, for each of one or more amounts of bandwidth candidate link sizes of said link, a plurality of state probabilities based on the GoS factor and a plurality of marginal packet loss probabilities based on the QoS factor, wherein said determining is performed based on user behavior and traffic characteristics;
determining, based on user behavior and traffic characteristics, said amount a link size of said link;
wherein determining said link size of said link comprises selecting one of the one or more amounts of bandwidth candidate link sizes of said link using the plurality of state probabilities and the plurality of marginal packet loss probabilities; and
storing said amount in memory.

It is respectfully submitted that several recited features in Claim 1 are not disclosed in the references cited in the Office Action. Claim 1 at least features determining, for each of one or more candidate link sizes, **both a plurality of state probabilities based on the GoS factor and a plurality of marginal packet loss probabilities**. Using the plurality of state probabilities and the plurality of marginal packet loss probabilities, the method of Claim 1 determines the link size of the link by selecting one of the candidate link sizes.

Soumiya

Soumiya discloses a connection admission control method based on an average cell rate Ra and a peak cell rate Rp which are **declared by a user** (*see, e.g.*, Abstract). The *Soumiya* method is used to perform **call admission control** and to **allocate bandwidth to calls admitted on a transmission line**, not to determine a link size of a link. In fact, in *Soumiya*, the bandwidth on a link has a (fixed) physical bandwidth (*e.g.*,

in an ATM network). *See Soumiya* col. 7 lines 31-39. In short, *Soumiya* only determines whether a new call should be accepted or rejected based on the **physical bandwidth already fixed** on the link and the current **usage** of that physical bandwidth by the already admitted calls. Neither the physical bandwidth already fixed, nor the usage of that bandwidth, is equivalent to a link size of a link that is **to be determined** by the method of Claim 1.

In addition, as correctly noted by the Office Action, *Soumiya* is devoid of any disclosure about a GoS factor. Consequently, *Soumiya* does not and cannot disclose determining a plurality of state probabilities based on the GoS factor, as featured in Claim 1, since the GoS factor is missing in *Soumiya*.

Soumiya further fails to disclose selecting the link size of the link using **a plurality of state probabilities and a plurality of marginal packet loss probabilities**, as featured in Claim 1, since the plurality of state probabilities is calculated with the GoS factor and since the GoS factor is missing in *Soumiya*.

Fodor

The Office Action relies on *Fodor* to disclose that determining a bandwidth amount is based on a GoS factor. This reliance on *Fodor* by the Office Action is misplaced.

Fodor discloses a method for sharing a **fixed link bandwidth** in a mixed rigid-elastic traffic environment. The link bandwidth (or capacity) is fixed in *Fodor* as C (col. 9 lines 2-6), as in the case of *Soumiya*. According to *Fodor*, the link capacity may be divided into a C_{COM} used by both rigid and elastic traffic and a C_{ELA} dedicated to elastic flows only. The passage of *Fodor* cited by the Office Action only discloses how bandwidths for the rigid traffic class and two elastic traffic classes (adaptive and non-adaptive, respectively), which share the same link with fixed link capacity C, may be determined (col. 10, lines 1-36). There is no disclosure in *Fodor* that a link size of a link is determined based on a GoS factor. Respectfully, a bandwidth for a traffic class that

shares a link with other traffic classes is not the same as a link size of the link as featured in Claim 1.

Beshai

The Office Action relies on *Beshai* to disclose a QoS factor that specifies a maximum packet loss probability for said link, the plurality of marginal packet loss probabilities that are determined based on the QoS factor, and a link size of a link that is determined by selecting one of the one or more bandwidths using the plurality of marginal packet loss probabilities. Respectfully, this reliance on *Beshai* by the Office Action is misplaced.

Beshai is a research paper that studies the effect of an ATM's network's cell loss performance that has been engineered to meet a fixed call blocking objective (i.e., GoS=1%) (see page 1054 col. 2 lines 1-4). According to *Beshai*, an ATM call's peak rate and mean rate are converted into an equivalent rate that is somewhere in between the mean rate and the peak rate (see page 1053 lines 8 and 9 under the heading “*C. traffic Burstiness and Equivalent Rate*”). The equivalent rate is used in the GoS calculation to determine whether the call should be admitted (page 1053 col. 2 lines 1 and 2). In other words, the network is engineered based on the GoS calculation alone. The fact that the cells may be lost due to burstiness is indirectly accounted for in the equivalent rate. The extent of the cell loss under this particular approach (i.e., sizing/dimensioning a network based on the GoS factor/equivalent rate) is the subject of study in this research paper.

Beshai does not disclose determining a plurality of state **probabilities** based on the GoS factor and a plurality of marginal packet loss **probabilities** based on the QoS factor, as alleged by the Office Action.

Rather, *Beshai* discloses computing an equivalent rate of a call based on the peak rate and the mean rate of a traffic descriptor of the ATM call (see, e.g., TABLE I through TABLE V on page 1055; page 1053 col. 1, the 1st paragraph under the heading “*A. Approach*”, “In this paper, the resource requirement of an ATM connection will be

estimated in the form of bandwidth requirement, and will be referred to as the connection’s **equivalent rate**” (emphasis added)).

As *Beshai* explicitly discloses, cell loss performance perceived by the accepted calls, are quantified, **assuming** the equivalent rates are estimated based on the Gibbens-Hunt formula (*see* page 1054 lines 1-4 of the first paragraph following the heading “IV. Impact of Call-Occupancy Fluctuations on Cell Loss”).

Therefore, in *Beshai*, the equivalent rate is computed first using the Gibbens-Hunt formula first. Such an equivalent rate is then used to determine whether a call can be admitted based on the GoS objective. Thereafter, the cell loss performance (i.e., QoS) may be estimated.

In sharp contrast, in Claim 1, QoS (which is equivalent to the cell loss performance according to the Office Action) is received first, then the state probabilities and the maximum packet loss probabilities corresponding to each of a number of candidate link sizes are determined, and then a link size of a link is selected among the number of candidate link sizes.

For these reasons, *Beshai* fails to disclose (receiving) a QoS factor that specifies a maximum packet loss probability for said link, the plurality of marginal packet loss probabilities that are determined based on the QoS factor, and a link size of a link that is determined by selecting one of the one or more bandwidths using the plurality of marginal packet loss probabilities, as featured in Claim 1.

Consequently, Claim 1 is patentable over *Soumiya* in view of *Fodor* and in further view of *Beshai*. Removal of the rejection to Claim 1 is respectfully requested.

Claims 20, 33, and 46

Claims 20, 33, and 46 each recite similar features as those discussed above with respect to Claim 1. For example, Claim 33 is recited in a format allowable by 35 USC §112, and corresponds to method Claim 1 discussed above. Claim 20 is a computer readable storage medium claim that corresponds to method Claim 1. Claim 46 is an

apparatus claim that corresponds to method Claim 1. Therefore, Claims 20, 33, and 46 are patentable for at least the same reasons discussed above as to Claim 1.

Claims 12, 31, 44 and 57

Claims 12, 31, 44 and 57 depend from, and hence, incorporate all of the limitations of Claim 1, 20, 33, or 46. These claims also recite further limitations that render them patentable over *Soumiya* in view of *Beshai*. Applicant submits that Claims 12, 31, 44 and 57 are patentable over *Soumiya* in view of *Beshai* for at least the reasons given above in connection with Claim 1, 20, 33, or 46.

B. ISSUES RELATED TO 35 U.S.C. 103(a) – *SOUMIYA, FODER, BESHAI* AND *KRAUSHAAR*

Claims 2, 21, 34, and 47 are rejected under 35 U.S.C. 103(a) as allegedly unpatentable over *Soumiya* in view of *Foder* and *Beshai*, and further in view of *Kraushaar*, U.S. Patent No. 4,200,771 (hereinafter "*Kraushaar*"). This rejection is respectfully traversed.

Claims 2, 21, 34, and 47 depend from, and hence, incorporate all of the limitations of Claim 1, 20, 33, or 46. These claims also recite further limitations that render them patentable over *Soumiya* in view of *Beshai*, and in further view of *Kraushaar*. Applicant submits that Claims 2, 21, 34 and 47 are patentable over *Soumiya* in view of *Beshai*, and in further view of *Kraushaar* for at least the reasons given above in connection with Claim 1, 20, 33, or 46.

C. ISSUES RELATED TO 35 U.S.C. 103(a) – *SOUMIYA, FODER, BESHAI* AND *MASHINKSY*

Claims 3, 22, 35 and 48 are rejected under 35 U.S.C. 103(a) as allegedly unpatentable over *Soumiya* in view of *Foder* and *Beshai*, and further in view of *Mashinksy*, US20050111647A1 (hereinafter "*Mashinsky*"). This rejection is respectfully traversed.

Claims 3, 22, 35 and 48 depend from, and hence, incorporate all of the limitations

of Claim 1, 20, 33, or 46. These claims also recite further limitations that render them patentable over *Soumiya* in view of *Foder* and *Beshai*, and further in view of *Mashinsky*. Applicant submits that Claims 3, 22, 35 and 48 are patentable over *Soumiya* in view of *Foder* and *Beshai*, and further in view of *Mashinsky* for at least the reasons given above in connection with Claim 1, 20, 33, or 46.

D. ISSUES RELATED TO 35 U.S.C. 103(a) – SOUMIYA, FODER, BESHAI AND VANDERVORT

Claims 4, 23, 36 and 49 are rejected under 35 U.S.C. 103(a) as allegedly unpatentable over *Soumiya* in view of *Foder* and *Beshai*, and further in view of VanDervort, U.S. Patent No. 5,699,346 (hereinafter "VanDervort"). This rejection is respectfully traversed.

Claims 4, 23, 36 and 49 depend from, and hence, incorporate all of the limitations of Claim 1, 20, 33, or 46. These claims also recite further limitations that render them patentable over *Soumiya* in view of *Foder* and *Beshai*, and further in view of *VanDervort*. Applicant submits that Claims 4, 23, 36 and 49 are patentable over *Soumiya* in view of *Foder* and *Beshai*, and further in view of *VanDervort* for at least the reasons given above in connection with Claim 1, 20, 33, or 46.

E. ISSUES RELATED TO 35 U.S.C. 103(a) – SOUMIYA, FODER, BESHAI AND DEPELTEAU

Claims 5, 24, 37 and 50 are rejected under 35 U.S.C. 103(a) as allegedly unpatentable over *Soumiya* in view of *Foder* and *Beshai*, and further in view of Depelteau, US006118764A (hereinafter "Depelteau"). This rejection is respectfully traversed.

Claims 5, 24, 37 and 50 depend from, and hence, incorporate all of the limitations of Claim 1, 20, 33, or 46. These claims also recite further limitations that render them patentable over *Soumiya* in view of *Foder* and *Beshai*, and further in view of *Depelteau*. Applicant submits that Claims 5, 24, 37 and 50 are patentable over *Soumiya* in view of

Foder and *Beshai*, and further in view of *Depelteau* for at least the reasons given above in connection with Claim 1, 20, 33, or 46.

F. ISSUES RELATED TO 35 U.S.C. 103(a) – SOUMIYA, FODER, BESHLAI AND TAKEUCHI

Claims 6, 25, 38 and 51 are rejected under 35 U.S.C. 103(a) as allegedly unpatentable over *Soumiya* in view of *Foder* and *Beshai*, and further in view of *Takeuchi*, US20040062256A1 (hereinafter "*Takeuchi*"). This rejection is respectfully traversed.

Claims 6, 25, 38 and 51 depend from, and hence, incorporate all of the limitations of Claim 1, 20, 33, or 46. These claims also recite further limitations that render them patentable over *Soumiya* in view of *Foder* and *Beshai*, and further in view of *Takeuchi*. Applicant submits that Claims 6, 25, 38 and 51 are patentable over *Soumiya* in view of *Foder* and *Beshai*, and further in view of *Takeuchi* for at least the reasons given above in connection with Claim 1, 20, 33, or 46.

G. ISSUES RELATED TO 35 U.S.C. 103(a) – SOUMIYA, FODER, BESHLAI AND ISHIKAWA

Claims 11, 30, 43 and 56 are rejected under 35 U.S.C. 103(a) as allegedly unpatentable over *Soumiya* in view of *Foder* and *Beshai*, and further in view of *Ishikawa*, US005838671A (hereinafter "*Ishikawa*"). This rejection is respectfully traversed.

Claims 11, 30, 43 and 56 depend from, and hence, incorporate all of the limitations of Claim 1, 20, 33, or 46. These claims also recite further limitations that render them patentable over *Soumiya* in view of *Foder* and *Beshai*, and further in view of *Ishikawa*. Applicant submits that Claims 11, 30, 43 and 56 are patentable over *Soumiya* in view of *Foder* and *Beshai*, and further in view of *Ishikawa* for at least the reasons given above in connection with Claim 1, 20, 33, or 46.

H. COMMENTS ON EXAMINER'S RESPONSE

The present Office Action merely cites previously recited passages in the references and provides no substantive response as to why Applicant's previously

submitted arguments fail to be persuasive. The Office Action does not particularly point out what in the cited references corresponds to or constitutes each requisite element or feature of Applicant's claims. In an Office Action "the particular part relied on must be designated as nearly as practicable ... The pertinence of each reference, if not apparent, must be clearly explained ..." 37 C.F.R. § 1.104; MPEP 707. The present citations to the combination of references do not provide Applicants with adequate notice or reasonable particularity with respect to the basis of the rejections. Instead, the whole references are simply identified in a non-specific way with large passages. As a result, Applicants have to engage in guesswork to determine the basis of the rejection. Since the Office Action fails to point out what in the cited references corresponds to or constitutes each requisite element or feature of the claims, or clearly explain the pertinence of each reference, the Office Action fails to set forth a prima facie case of unpatentability and the rejection represents clear error reversible on appeal. Reconsideration is requested.

IV. CONCLUSIONS & MISCELLANEOUS

For the reasons set forth above, all of the pending claims are now in condition for allowance. The Examiner is respectfully requested to contact the undersigned by telephone relating to any issue that would advance examination of the present application.

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A petition for extension of time, to the extent necessary to make this reply timely filed, is hereby made. If applicable, a check for the petition for extension of time fee and other applicable fees is enclosed herewith. If any applicable fee is missing or insufficient, throughout the pendency of this application, the Commissioner is hereby authorized to any applicable fees and to credit any overpayments to our Deposit Account No. 50-1302.

Respectfully submitted,

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Dated: February 21, 2008

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